Asian Review of Accounting

Proprietary costs of intellectual capital reporting: Malaysian evidence
Hasnah Kamardin Robiah Abu Bakar Rokiah Ishak

Proprietary costs of intellectual capital reporting: Malaysian evidence

Hasnah Kamardin, Robiah Abu Bakar and Rokiah Ishak
School of Accountancy, Universiti Utara Malaysia, Sintok, Malaysia

Received 21 April 2014
Revised 15 July 2014
18 September 2014
Accepted 19 September 2014

Abstract

Purpose – The purpose of this paper is to examine the relationship between intellectual capital (IC) performance (value-added intellectual coefficient (VAIC)) and company characteristics with IC disclosure (ICD) in Malaysian listed companies.

Design/methodology/approach – Sample of the study is 68 biggest Malaysian companies listed in Malaysian Stock Exchange based on market capitalization in year 2006. The paper follows the classification of ICD by Huang *et al.* (2007), with three broad IC categories in 45 items. Content analysis was used to collect the IC information from the annual reports. Regression analysis was conducted for VAIC and its components. Log linear analysis was also conducted to cater the possible misspecification in the model.

Findings – Results of the study show that VAIC is negatively related to ICD. Further classification of VAIC shows that intellectual capital efficiency and human capital efficiency are negatively related to ICD whilst structural capital efficiency is not related to ICD. Company size and leverage are found to be positively related to ICD.

Research limitations/implications – Negative association between VAIC and ICD suggests that companies reduce ICD for competitive advantage reason which supports the proprietary cost theory. The findings of the study may provide some evidence to regulators to enhance the reporting practices of IC for the benefits of users of financial reporting in making relevant decisions. The focus should be given on the reporting of human capital items.

Originality/value – This is the first paper to use IC framework by Huang *et al.* (2007). Consistency of findings with other studies using different IC framework can be compared for the choice of IC framework in future studies.

Keywords VAIC, Intellectual capital disclosure, Voluntary disclosure, Human capital efficiency, Intellectual capital efficiency, Structural capital efficiency

Paper type Research paper

1. Introduction

In today's economy, knowledge or intellectual capital (IC) plays a more important role as economy's wealth production factors compared to physical assets. More and more businesses make investment in information, internet, software, brands, patents, rights, research and innovations, product breakthroughs, globalization, global reach, global customer base, worldwide network, rather than physical assets (Seetharaman *et al.*, 2002). The shift is due to the use of information technology whereby businesses give more emphasize on expertise and technical ability, and less on manual labour and physical capital (Brinker, 2000). This leads to IC is becoming a major part of companies' value and the success of business entities is increasingly a function of leveraging the IC in those entities (Keenan and Aggestam, 2001).

The authors would like to acknowledge the financial support from Universiti Utara Malaysia (UUM) for the research grant to conduct the study.

Asian Review of Accounting
Vol. 23 No. 3, 2015
pp. 275-292

1321-7348
DOI 10.1108/ARA-04-2014-0050

There is a growing demand for more information on IC matters such as human capital, employee, know-how and skills, productive power and information technology amongst users of financial accounting information. However, the investment in the IC matters is still does not appear as positive asset value (Brinker, 2000). Given that IC is increasingly important and becoming a major component of capital, as well as the key tools of the new value creation of wealth, it is important to incorporate IC in the balance sheet. However, relative to tangible assets which are universally recognized, well defined and measured in company accounts, IC assets are difficult to be defined, recognized, managed and measured in the traditional sense (Sudarsanam *et al.*, 2005). Because of these difficulties, most companies fail to recognize IC in their financial statements, even though IC is important to a firm's competitive advantage and contribute to value creation capabilities of a company. By not incorporating IC in the balance sheet, traditional accounting therefore underestimates the true value of firms (Lev and Zarowin, 1999). Various studies also reported that there exist an information gap between the types of information disclosed in annual reports and the types of information demanded in the market (Eccles and Mavrinac, 1995). Bukh (2003) revealed that the information gap is due to lack of communication between company management and the capital market.

The failure to identify, measure, evaluate and report internally the value of relevant IC components leads to decisions in which the value of IC is not incorporated in the balance sheet (Van der Meer-Kooistraand and Zijltra, 2001). One of the effects of not reporting IC externally would lead to investors having limited information about companies' intangible assets and this might increase the investors' risk perception about these companies. Another effect would lead to the underestimation of future earnings especially for companies with large IC resources. This condition may negatively affect a company in finding new funds which then slow down the growth and erode the competitive advantage of companies.

With the rapid change within the business operation in the new economy, it is important to find out whether firms also adjust their disclosure practices. The objective of the study is to examine the relationship between IC disclosure (ICD) and the value of IC as measured by the value-added intellectual coefficient (VAIC). Due to the importance of IC performance in companies' long-term competitive advantage, the study also examines the influence of each component of VAIC in relation to ICD. The results are expected to provide empirical evidence to the policy makers such as capital market regulators and standard setting bodies in monitoring the efficiency of value creation investment and IC reporting practices.

2. IC background

2.1 IC reporting framework

The Organisation for Economic Co-operation and Development (1999) defines IC as the economic value of two categories of intangible assets, i.e. structural capital and human capital. Structural capital consists of proprietary software systems, distribution networks, supply chains and others. Human capital includes human resources within the organization and also those that are external to the organization, such as customers and suppliers. The term IC is normally treated as being synonymous with intangible assets. In most cases, IC comprises of three categories: human capital/employee competence; internal structure/structural capital; and external structure/customer capital/relational structure. IC is expected to create value, achieve and maintain a competitive advantage for the firms (Sveiby, 1997).

Various IC frameworks have been developed to capture the IC items in annual reports. IC framework represents the coding schema to classify information and it will assist researchers to identify how IC components are visualized, valued and understood within the organization (Guthrie *et al.*, 2004). The IC framework was initially produced by Brooking (1996) and followed by Sveiby (1997). Their frameworks have then been refined by other IC researchers such as by Guthrie *et al.* (1999) which contained over 30 attributes across the three IC categories (internal, external and human capital); Guthrie and Petty (2000) modified the IC framework into 24 attributes (nine internal capital, nine external capital and six human capital).

The framework was adopted by other researchers such as Brennan (2001), April *et al.* (2003) and Goh and Lim (2004). Bozzolan *et al.* (2003) also used the modified version of Guthrie and Petty (2000). In Bozzolan *et al.*'s framework, they have 22 IC items. They excluded management philosophy and financial relations and included research projects as a new attribute to the internal capital. For external capital, they excluded favourable contracts and company names, but introduced new attributes which are research collaborations and financial contracts. As for the human capital, vocational qualifications and entrepreneurial spirit had been removed but replaced by attribute employees. This framework was later replicated by Vandemale *et al.* (2005), in their IC studies in the Netherlands, Sweden and the UK.

Guthrie *et al.* (2004) refined the framework to maintain only 18 attributes of IC, where, in this framework, for internal structure section, the intellectual property is considered as one attribute; information systems and networking systems are combined as one attribute. A framework by Abeysekera and Guthrie (2004) also classifies IC into three components: internal, external and human capital but these three components are further expanded into 45 IC items; ten internal capital, ten external capital; and 25 human capital. Another framework has been introduced by Firer and Williams (2005), where they investigated the level of ICD by using a disclosure index comprising 53 IC items with five IC categories. The compilation of IC items has been employed from the work of Guthrie and Petty (2000) and Bozzolan *et al.* (2003). Abdolmohammadi (2005) used modified framework of Guthrie *et al.* (2004), with ten categories and 58 IC items. A list of 58 components was developed from extensive literatures and the components were then aggregated into ten IC categories.

Besides the frameworks discussed above, Bontis (2003) produced IC-related search items gathered from a panel of researchers from the World Congress on Intellectual Capital. He summarized the list into a collection of 38 items. This IC-related search terms are later used by Vergauwen and Alem (2005) in their study of ICDs in The Netherlands, France and Germany. Citron *et al.* (2005) investigated the extent to which annual report narrates ICD using a dictionary constructed containing 760 relevant keyword combinations. In their study they also classified IC under three main heading, i.e. human, relational and structural capital. This framework has been adopted by firms pioneering structured reporting such as Skandia and Danish IC project.

A study in Malaysia by Huang *et al.* (2007) has made an attempt in grouping IC items based on managers' responses about the availability of IC information in their companies. Factor analysis was used to group the IC items. Huang *et al.* found that the conventional three priori groupings (human capital, customer capital and structural capital) have expanded into eight groups. However, further scrutiny shows that the eight groups are actually the same three "meta-categories" of the three IC components. In this study human capital has been separated into employee capabilities, employee development and retention and employee behaviour. Structural capital has been split into two, which are

development of products ideas and organizational infrastructure. Customer capital has been separated into three sub-groupings, which are market perspectives, data on customer and customer service and relationship. The final IC framework of Huang *et al.* (2007) consists of 16 attributes of human capital, 14 attributes of structural capital and 15 attributes of relational capital.

2.2 ICD

Since the introduction of Malaysian Financial Reporting Standards (MFRS) 138 Intangible Assets, which had come into effect for reporting periods beginning 1 January 2012, to some extent there are available guidelines in relation to reporting intangible assets. However, some of the internally generated assets (including IC items) are not recognized as intangible assets. Thus, most of the costs incurred for creating IC items will be recognized as expenses. Financial Reporting Standards (FRS) 138 encourages firms to disclose a brief description of assets which are not recognized on the financial statement. Given the absence of mandatory requirements, many firms provide voluntary information about IC in the annual reports in the form of narrative or qualitative statements rather than in quantitative terms.

In terms of the extent of ICD in Malaysia, some evidence can be found in Bontis *et al.* (2000), Goh and Lim (2004), Yau *et al.* (2009) and Ahmed and Mohd-Ghazali (2012). Bontis *et al.* (2000) investigated the inter-relationship between customer capital, structural capital and human capital with business performance for the service and non-service industries. The result of the study revealed that regardless of industry type human capital is important: human capital has a greater influence on how a business should be structured in non-service industries compared to service industries. Customer capital had a significant influence over structural capital irrespective of industry. The development of structural capital had a positive relationship with business performance regardless of industry.

Goh and Lim (2004) examined the ICD in the top 20 profit-making companies. They reported that among the items that were at the lowest ranking were IC, organizational learning, expert teams, management quality competencies, innovative, organization learning, human assets, knowledge sharing, human capital, employee competitiveness, creativity, human value, IC and specialist service. In general, the incidence of ICD is found to be highly qualitative, rather than quantitative. Technology industry has the highest percentage of reporting the IC terms, followed by consumer products, trading/services, plantation, finance, industrial products, properties and others.

Ahmed and Mohd-Ghazali (2012) examined the trend of ICD during the financial crisis period (2008-2010). The results reported an increasing trend of the ICD, especially for the human capital. However, they found significant differences in ICDs according to categories whereby external capital was the most disclosed.

In terms of coding system, all the studies above used simple method of scoring: "1" if IC items are disclosed and "0" if not disclosed. Studies by Yau *et al.* (2009) and Wong and Gardner (2005) differentiate narrative disclosure differently from monetary or other quantitative disclosure. Monetary or other quantitative disclosures were given more weights because the information is more relevant to decision usefulness, more credible and can be verifiable. Yau *et al.* (2009) classified ICD into four scores: "0" if the IC item was not disclosed; "1" if IC item was disclosed in narrative format; "2" If IC item was disclosed in numerical format; and "3" if IC item was disclosed in monetary format. The study also made comparison between the IC framework of Guthrie and Petty (2000) and Huang *et al.* (2007). They found that the groupings of IC items in Guthrie and Petty (2000)

are to a large extent consistent with Huang *et al.* (2007) and suggested the issue of cultural differences by adopting either framework may not occur. For comparison purposes with previous studies, Yau *et al.* (2009) used IC framework by Guthrie and Petty (2000). The results showed that the most disclose IC category was structural capital (57 per cent), followed by relational capital (30 per cent) and human capital (13 per cent). They also noted that majority of the disclosures used narrative format and the format of presenting IC attributes was not consistent.

2.3 IC performance

IC Performance or VAIC is a measure for evaluating the efficiency of IC within a company. VAIC is basically an indirect measure of IC value and it provides information about the efficiency of tangible and intangible assets (human capital and structural capital) which are useful to generate value to the company (Pulic, 2000). Accordingly, the measurement of VAIC is objective in value and reliable because the data are gathered from the audited financial statements. Higher VAIC value means better management in utilizing companies' value creation potential or managers are efficient in managing companies' resources. VAIC indicates corporate value creation efficiency, i.e. the higher the VAIC the better management utilizes the company's value creation potential. Firer and Williams (2005) addressed that VAIC has many advantages to be used: easy-to-calculate; standardized and consistent basis of measure; and the data are based on audited financial statements. In addition, the nature of data in the form of financial or monetary measure provides a concrete basis for comparing the IC value between companies (Kujansivu and Lonnqvist, 2007).

VAIC indicates the total efficiency of value creation from all resources employed in a company. The major components of VAIC consist of physical capital and IC in which IC comprises human capital and structural capital (Chen *et al.*, 2005; Kujansivu and Lonnqvist, 2007; Pulic, 2000; Tan *et al.*, 2007; Williams, 2001). The measure for physical and financial capital is known as Capital Employed Efficiency (CEE). CEE is an indicator of how much value added is created by a dollar input of physical capital. Human Capital Efficiency (HCE) indicates how much value added is created by a dollar input of physical capital. Structural Capital Efficiency (SCE) represents the proportion of total value added accounted for by structural capital. The sum of the three measures is the value of VAIC (i.e. CEE + HCE + SCE).

Specific studies on the relationships between VAIC and ICD are limited and can be found in Williams (2001), Goh (2005) and Gan and Saleh (2008). Williams (2001) investigated the relationship between IC performance and the extent of ICD for 31 FTSE 100 listed companies in UK from 1996 to 2000. The ICD was measured using a disclosure index of 50 items. Simple method of scoring was used (1,0). This quantity approach was adopted to avoid issues of subjectivity in given score. Result indicated that IC performance as measured by VAIC had significant negative relationship with the extent of ICD for two years, 1996 and 1998. The trend of ICD was increasing over the five years. In terms of changes in ICD and IC performance between consecutive years, the results indicated that the number of firms showing increase in ICD was higher than firms showing decrease in ICD. The change between each consecutive year was statistically significant. For VAIC, there was no specific trend shown for the five years. The VAIC value was found high in year 1996 and 1998. The relationship between VAIC and ICD was found negatively significant in years where the VAIC was found high. He advocated that the management's concern of losing competitive advantage to competitors leads them to refrain from disclosing certain IC information to competitors.

A study by Firer and Williams (2005) examined the relationship between the components of VAIC with traditional measures of firm performance (profitability, productivity and market valuation) in South Africa. They found that CEE was positively related to market valuation, and HCE was found negatively related to productivity and market valuation. Physical capital remained the most significant resource of corporate performance.

Goh (2005) was the first study in Malaysia to review performance of commercial banks using the value of IC performance. Data from the period 2001 to 2003 was used to compare the efficiencies of domestic banks vs foreign banks. Banks were ranked according to their VAIC values. The study showed that the value creation capability of both domestic and foreign banks was the result of efficiently use of human capital. Investment in human capital was shown to yield higher return than investment in physical and structural capital. However, the study also noted that if the redundant resources are not effectively utilized, the banks' efficiency level will deteriorate over time.

Study by Gan and Saleh (2008) examined the association between IC performance and corporate performance of technology-incentive companies for the year 2004 and 2005. Following Chen *et al.* (2005), they examined VAIC as an aggregate measure and also as separate components (i.e. HCE, SCE, CEE) with corporate performance measured by market to book value, profitability and productivity. They found that VAIC had positively significant relationship with profitability and productivity but not significant with market to book value. For separate components of VAIC, consistently they found CEE and HCE positively significant with all measures of corporate performance. SCE was not significantly related. The results suggest that physical capital efficiency (CEE) and HCE are important in enhancing the corporate performance (market valuation, profitability and productivity). A study by Huei-Jen (2006) also showed that VAIC is positively related to profitability (ROA) and market valuation (market to book value).

Ting and Lean (2009) examined the relationship between IC performance (VAIC and its components) and financial performance (ROA) of financial institutions in Malaysia for the period 1999-2007. The study showed that the value creation capability of financial institutions was largely attributed to HCE. The regression analysis showed that VAIC was positively related to ROA. For VAIC component, the result showed that only HCE and CEE were positively related to ROA. SCE was negatively related but the relationship was not significant. The results somehow demonstrate that increase in value creation efficiency affects firm's profitability.

Mohd-Saleh *et al.* (2009) examined the influence of ownership structure (management, foreign, government and family ownership) on IC performance of companies listed on MESDAQ market in Malaysian Exchange of Securities for a period of three years from 2005 to 2007. Family ownerships were found to have negative influence on IC performance for both VAIC and its components (SCE, CEE and intellectual capital efficiency (ICE)). The result suggests the opportunistic behaviour of families to pursuing their objectives at the expense of minority shareholders.

3. Hypotheses development

3.1 IC performance and ICD

The current study uses legitimacy theory and proprietary cost theory to develop the hypothesis. According to legitimacy theory, the disclosure of IC information can legitimize companies' activities. Companies with substantial IC performance, which was reflected in the higher VAIC, may also have substantial IC-related items and lack of ICD will undermine the reputation of the company (Williams, 2001). Firms with IC-related

items therefore will increase ICD as to reap all the benefit offered by greater disclosure, such as low cost of capital (Lev, 2001; Williams, 2001), and reduced political costs (White *et al.*, 2007). From previous literatures on voluntary disclosure, companies normally disclose more information than required to legitimize their activities. Williams (2001) argued that firms will provide IC information so that investors and other relevant stakeholders can better assess the firms' future capabilities. Firms could benefit in terms of reduction in the perceived risk associated with the entity and hence would reduce cost of capital when they produce more information to the public. Firms with higher level of IC performance may also have substantial IC value. These firms therefore, have the incentive to disclose more IC information as the lack of such disclosure might undermine their reputation. Companies with high investment in IC will face problem of getting future financing when they fail to disclose the companies' true value. This will affect their future growth. For these companies, the traditional financial statement only show a small part of the total assets of a company if they ignore IC-related information. Another impact of poor ICD as proposed by Williams (2001) is that these high IC investment companies might fail to meet the demand of pressure groups such as trade union and consumer organization. The lack in human capital reporting may reveal firms are not investing enough for employees' well-being, such as in education and training. Lev (2001) stressed that the inability of the companies to disclose intangible assets often result in abnormal gains to informed investors, undervaluation of companies and increasing cost of capital, which will distort the investment growth of the companies.

However, the proprietary cost theory may explain the economic consequences of full disclosure, whereby threat of competitors will motivate companies not to disclose information is greater than any benefit offered by disclosure (Healy and Palepu, 2001). Prencipe (2004) argued the reluctance of growth companies to disclose their segment reporting for fear of exposing their business opportunities to their competitors. Williams (2001) found a negative relationship between IC performance and ICD. Firms reduce ICD levels in order to maintain any competitive advantage it has and that action is taken as an effort not to signal competitors about the potential opportunities. Based on the arguments above, the hypotheses are as follows:

H1a. There is a significant relationship between VAIC and the level of ICD.

H1b. There is a significant relationship between ICE and the level of ICD.

H1c. There is a significant relationship between HCE and the level of ICD.

H1d. There is a significant relationship between SCE and the level of ICD.

3.2 Company characteristics and ICD

3.2.1 Profitability. Companies having higher profitability may disclose more information in their corporate annual reports as to share the good news and to signal that the management has done a good job to the company. Management of profitable firms will disclose more information in order to obtain personal advantage from the companies; therefore they would rather share good news than bad news. As a result, profitable companies will disclose more information in their corporate annual reports, including information related to IC. Management too, will use this information to strengthen their reputation as well as their position in that successful company.

Oliveira *et al.* (2006) used signalling theory to suggest that highly profitable firms release more information, especially in relation to good news, to avoid undervaluation of shares. Political cost theory is another reason for highly profitable firms to provide

greater disclosure, i.e. in order to show the market the source of their profit and to ease the political cost effect. On the other hand, perspective of proprietary cost theory argues that companies may be reluctant to disclose more information, especially on proprietary-related information for fear of competitors. Despite the increased demand on IC information, some argued that such information might put the company in danger of losing competitive advantage (Williams, 2001).

Empirical evidence regarding the relationship between profitability and disclosure is mixed. While Haniffa and Cooke (2002) and Owusu-Ansah (1998) revealed a significant positive relationship, Chen and Jaggi (2000) and Wallace and Naser (1995) found a significant negative relationship between profitability and the extent of mandatory disclosure. The other studies (Barako *et al.*, 2006; Garcia-Meca *et al.*, 2005; Oliveira *et al.*, 2006; Williams, 2001) suggested that the direction of the relationship is not clear as the results of their tests are not significant. In light of the above discussion, the following hypothesis is examined:

H2. There is a significant relationship between profitability and the extent of ICD.

3.2.2 Market-to-book-value ratio (MVBV). MVBV is used as a proxy of growth. The difference between MV and BV is caused by the intangibles of the business that are not currently valued in the financial statement. This practice has resulted in hidden value which is not visible in the conventional balance sheet despite huge investments made in this hidden asset. Li *et al.* (2008) argued that ICD is likely to be greater where the hidden value is higher. The result of their study supports the argument that companies with greater hidden value (IC) will disclose more IC-related information as to signal the market their real value drivers, which would lead to more rational decision making by investors.

Legitimacy theory suggests that companies with larger hidden value will make more ICD to inform their stakeholders about such investments. Li *et al.* (2008) again argued that IC intensive companies are more prone to have a higher hidden value due to the inability of traditional accounting system to reflect human, structural and relational capital. Garcia-Meca *et al.* (2005) also found a significant positive relationship between ICD through presentation to analysts and this hidden value. In line with this, they concluded that companies with hidden intangible value will disclose a wide range of non-financial information to close this information gap between managers and investors. Hence, companies that have IC-related information should be interested to disclose them, since these elements will form the basis for the business' future growth and will enhance their corporate reputation and values of the companies:

H3. There is a significant relationship between MVBV and the level of ICD.

3.2.3 Leverage. Creditors rely on the information about companies' performance through the annual reports. Thus, companies with high leverage are expected to provide more information, including that related to IC, to satisfy the needs of their creditors, in addition to their shareholders and other stakeholders. Jensen and Meckling (1976) argued that with the presence of bondholders in a firm's capital structure, cost of monitoring will also increase. Jensen and Meckling (1976) stated that higher agency costs were imposed on high leverage firms due to the possibility that wealth may be transferred from debt-holders to shareholders.

Barako *et al.* (2006) agreed that firms which depend on public funds tend to prepare detailed information to enhance their chance of getting funds. Companies with high leverage are also expected to be monitored more closely by financial institutions and

may be required to provide information more frequently than companies with low leverage (Ahmed and Nicholls, 1994). These companies might try to establish or maintain credibility with financial institutions and at the same time signal a positive reputation to the capital providers. This is because transparent companies are considered good by the public. In addition to that, IC information is considered good for future growth of companies, and is therefore likely to be an important indicator of future cash flows for the companies. Thus, companies might provide such information to show that they will have no problem in meeting future obligations. On the other hand, Oliveira *et al.* (2006), using signalling theory suggested that some low leverage firms have the incentive to signal the market about their financial structure, i.e. their low gearing by implying higher voluntary disclosure. Some argued that such highly geared firms may want to hide the level of risk and therefore disclose less information in their annual reports.

Empirical results from previous studies are mixed. While some studies have found a positive association between leverage and the extent of disclosure (Barako *et al.*, 2006; Williams, 2001; White *et al.*, 2007), others did not find a significant relationship between leverage and disclosure (Craswell and Taylor, 1992; Garcia-Meca *et al.*, 2005; Ho and Wong, 2001; Oliveira *et al.*, 2006). However, Eng and Mak (2003) observed a significant negative relationship between the extent of disclosure and leverage. The following hypothesis is examined:

H4. There is a significant relationship between leverage and the level of ICD.

3.2.4 Firm size. Big size companies have more resources and have the capability to prepare ICD than small size companies. Previous studies have revealed a positive relationship between firm size and companies' ICD (Bozzolan *et al.*, 2003; Firer and Williams, 2005; Garcia-Meca *et al.*, 2005; Li *et al.*, 2008; Oliveira *et al.*, 2006; White *et al.*, 2007). The hypothesis is as follows:

H5. There is a positive relationship between firm size and the level of ICD.

4. Research method

4.1 Sample and data collection

Sample of the study is 68 companies from the 100 largest Malaysian companies listed in Bursa Malaysia based on the market capitalization in year 2006. Voluntary ICD was expected to increase following the introduction of FRS 138 Intangible Assets for the reporting periods beginning 1 January 2006 and then became effective for the reporting periods beginning 1 January 2012. The largest companies are selected because these companies are the most likely to have IC-related information in their financial statements and that they should have the financial resources to enable a move in the direction of ICD (Abdolmohammadi, 2005; Wong and Gardner, 2005). Data for the ICD were gathered from the annual reports of the companies. Content analysis was used to measure the level of IC reporting. Content analysis is a "research technique for making replicable and valid inferences from data according to their context" (Krippendorff, 1980, p. 21). Content analysis of annual reports has been carried out in accounting and IC studies (Abdolmohammadi, 2005; Goh and Lim, 2004; Guthrie *et al.*, 2006; Vandemale *et al.*, 2005), and in the corporate social and environmental reporting of accounting research (Gray *et al.*, 1995; Guthrie and Parker, 1990). Content analysis is a useful technique in extracting information, which is not explicitly presented in a quantified and structured format, but is implicit in the information (April *et al.*, 2003). The analysis

involves reading the annual reports of each company and coding the information contained therein, in accordance with a selected framework of IC indicators/attributes (Guthrie *et al.*, 2006; Guthrie and Petty, 2000). Content analysis requires texts (or contents) of annual reports, qualitative and quantitative information are coded into pre-defined categories (IC categories) in order to derive patterns in the presentation and reporting of information (Weber, 1990).

For the disclosure index of ICD, the study adopts the classification framework proposed by Huang *et al.* (2007). The framework is chosen because it is an evidence-based framework, based on empirical confirmation in identification and classification of IC components as well as IC items in Malaysian environment. The framework is more represented as it already takes into account all related cultural and other cross-country differences (Guthrie *et al.*, 1999; 2006). In addition, the use of this IC framework would confirm the findings in Williams (2001) using IC framework by Guthrie and Petty (2000).

To avoid subjectivity of content analysis involved in using simple scoring method, the current study adapts the decision rules by Wong and Gardner (2005) and Yau *et al.* (2009). The decision rules are that the coding is based on the meaning. The content analysis in this study is based on paragraphs. Different weight was given for ICD whereby more weight is given to quantitative/monetary format. If a paragraph has IC item score "1" is given, "0" otherwise. The coding system for the type of ICD is as follows: the score "1" was given for disclosure in narrative format; score "2" was given for disclosure in quantitative or monetary format. In this approach, the study differentiates disclosure in terms of its quality whereby disclosure in terms of quantitative format is given more scores.

For the reliability of the IC coding, following Milne and Adler (1999), the study uses a test-retest procedure. Five annual reports which were randomly selected were recoded after a period of one month from the first round of coding to ensure the same coder continues to code the reports in a similar manner. Results from the test-retest procedures are almost similar. The difference is less than 1 per cent which is not significant and is not going to affect the findings of the study.

The model of this study is as follows:

$$\mathrm{ICD} = \alpha + \beta_1 \mathrm{VAIC} + \beta_2 \mathrm{PROFIT} + \beta_3 \mathrm{LEV} + \beta_4 \mathrm{MVBV} + \beta_5 \mathrm{LnSIZE} + \varepsilon$$

where ICD is the intellectual capital disclosure; VAIC is value added intellectual capital; PROFIT is profitability; LEV is leverage; LnMVBV is logarithm of market value to book value; and LnSIZE is logarithm of size.

Following Chen *et al.* (2005) and Gan and Saleh (2008), in addition to examining the influence of aggregate measure of IC performance (VAIC) in the model, the current study also examines the influence of each of three components of VAIC in the model. This is based on the argument that management may place different values for the three components. If management behaves like that then the model using the three components of VAIC would be expected to reveal which components of VAIC affect the ICD.

4.2 Measurement of variables

The operational definitions of variables are reported in Table I.

5. Findings

The profile of the sample is reported in Table II. It shows that 35.29 per cent of the biggest 68 companies based on market capitalization in year 2006 are trading

Variable	Operational definitions	Sources
Intellectual capital disclosure (ICD)	ICD is a total of IC disclosure from human capital, structural capital and capital employed, ICD = HC + SC + CE Human capital (HC): the sum of the human capital disclosure; Structural capital (SC): the sum of structural capital disclosure Relational capital (RC)/external capital: the value of an organization's relationships with the people whom it does business with	Huang *et al.* (2007)
Value-Added Intellectual Coefficient (VAIC)	VAIC represents a measure for business efficiency or an indicator showing abilities of a company to create value VAIC = HCE + SCE + CEE; VAIC = ICE + CEE ICE = HCE + SCE VA = $P + C + D + A$ where P is operating profits, C is employees costs (total salaries and social expenses of employees), $D + A$ are depreciation and amortization of assets Capital employed efficiency (CEE) = VA/CE; CE is physical capital + financial assets or equity + accumulated profit and liabilities This is an indicator of how much value added is created by a dollar input of physical capital Human capital efficiency (HCE) = VA/HC; HC is employees costs or C This is an indicator of how much value added is created by a dollar input of human capital Structural capital efficiency (SCE) = SC/VA; SC = $P + D + A$ or VA−HC SCE represents the proportion of total value added accounted for by structural capital	Chen *et al.* (2005), Kujansivu and Lonnqvist (2007), Williams (2001)
Profitability (PROFIT)	Return on equity, net profit to total shareholders' funds	Oliveira *et al.* (2006), Williams (2001)
Leverage (LEV)	Debt ratio defined as total debt to total assets	Barako *et al.* (2006), Haniffa and Cooke, (2002), White *et al.* (2007)
Market-to-book value (MVBV)	Ratio of MV/BV MV = number of shares outstanding×stock price at year end BV = book value of stockholders' equity−Paid in capital of preferred stocks	Chen *et al.* (2005), Garcia-Meca *et al.* (2005), Li *et al.* (2008)
Firm size (SIZE)	Market value of equity shares	Bozzolan *et al.* (2003), Eng and Mak (2003), Garcia-Meca *et al.* (2005), Oliveira *et al.* (2006), Owusu-Ansah (1998), White *et al.* (2007)

Table I. Measurement of variables

Industry type	Frequency	Percentage (%)
Trading (TRAD)	24	35.29
Industry (IND)	11	16.18
Finance (FIN)	9	13.24
Consumer Product (CP)	8	11.76
Construction (CONS)	5	7.35
Infrastructure (INFRA)	4	5.88
Plantation (PLANT)	4	5.88
Property (PROP)	3	4.42
Total	68	100.00

Table II.
Profile of sample

companies. Almost 77 per cent of the sample is from trading, industry, finance and consumer product.

Table III reports descriptive statistics of the sample. The average mean of ICD is 751.94 score with a minimum of 247 score and a maximum of 2,215 score. All companies have relatively higher HCE than structural and capital efficiencies. The average percentage of debt ratio to total assets (LEV) is considered high at 46.20 per cent with the maximum of 94.14 per cent. The variation in ICD, VAIC, HCE, ICE and leverage are quite large whilst the variations found in SCE, CEE and LnSIZE are quite small.

Table IV shows that there is positive and significant correlation between company leverage (LEV) and firm size (LnSIZE) with the disclosure of intellectual capital (ICD). CEE is not correlated with VAIC and other components of VAIC. The correlation between other component of VAIC (HCE, SCE and ICE) with VAIC except for component CEE is high which is close to 0.70. Thus, in the following regression analysis, each component of VAIC is regressed separately with ICD to determine the influence of each component of VAIC on ICD.

Table V reports the regression analysis for the study in five models. Analysis shows that VAIC is negatively associated with ICD. Both firm size and leverage are positively associated with ICD in all models. When the component of VAIC is separately regressed in models 2-5, the results show that ICE, HCE and SCE are negatively associated with ICD whilst CEE has no association with ICD. PROFIT and LnMVBV are not related to ICD.

The negative relationship in model 1 support *H1* for the aggregate measure of VAIC and separate measure of ICE (*H1b*) and HCE (*H1c*). By analyzing the component of VAIC

	Mean	Min.	Max.	SD	Skewness	Kurtosis
ICD	751.94	247	2,215	421.89	1.26	1.67
VAIC	5.87	1.27	15.82	3.35	1.21	0.93
HCE	5.00	1.01	14.71	3.20	1.30	1.11
SCE	0.70	0.01	0.93	0.20	−1.65	2.88
CEE	0.18	0.02	0.73	0.13	1.52	3.77
ICE	5.69	1.07	15.65	3.34	1.20	0.97
PROFIT	16.38	−20.42	130.42	17.97	3.85	24.18
LEV	46.20	1.57	94.14	25.46	0.41	−0.70
LnMVBV	0.29	−0.57	1.35	0.34	0.64	1.34
LnSIZE	3.70	3.24	4.67	0.39	0.91	−0.22

Table III.
Descriptive statistics

Note: $n = 68$

	1	2	3	4	5	6	7	8	9	10
1. ICD	1									
2. VAIC	−0.201	1								
3. HCE	−0.206	0.998**	1							
4. SCE	−0.088	0.687**	0.654**	1						
5. ICE	−0.203	0.999**	0.999**	0.688**	1					
6. CEE	0.012	0.171	0.134	0.085	0.133	1				
7. LEV	0.375**	−0.129	−0.120	−0.066	−0.119	−0.261*	1			
8. LnSIZE	0.339**	0.132	0.132	0.136	0.135	−0.048	0.304*	1		
9. LnMVBV	0.175	0.096	0.073	0.088	0.076	0.539**	0.030	0.248*	1	
10. Profit	0.100	0.365**	0.331**	0.359**	0.339**	0.717**	0.065	0.818	0.543**	1

Note: *,**,***Significant at 0.1, 0.5 and 0.01 levels, respectively

Table IV.
Pearson correlation of variables

	Model 1	Model 2	Model 3	Model 4	Model 5
VAIC	−29.533				
	(−1.954)*				
ICE		−28.138			
		(−1.818)*			
CEE		270.992			507.590
		(0.436)			(0.819)
HCE			−30.865		
			(−1.979)*		
SCE				−247.088	
				(−0.970)	
PROFIT	1.843	0.356	1.660	0.581	−2.979
	(0.554)	(0.078)	(0.505)	(0.171)	(−0.703)
LEV	4.276	4.722	4.315	4.804	5.760
	(2.189)**	(2.174)**	(2.216)**	(2.435)**	(2.699)***
LnMVBV	105.002	79.591	103.054	131.232	111.218
	(0.621)	(0.447)	(0.610)	(0.759)	(0.616)
LnSIZE	289.267	301.929	290.350	266.460	272.121
	(2.134)**	(2.174)**	(2.143)**	(1.927)*	(1.938)*
Constant	−396.434	−494.906	−417.969	−325.44	−591.376
	(−0.850)	(−0.968)	(−0.898)	(−0.667)	(0.142)
R^2	0.254	0.257	0.255	0.220	0.217
Adjusted R^2	0.194	0.184	0.195	0.157	0.154
F-test	4.230***	3.520***	4.255***	3.504***	3.436***

Note: *,**,***Significant at 0.1, 0.5 and 0.01 levels, respectively

Table V.
Regression analysis

independently, the results indicate that the negative relationship between VAIC and ICD and between ICE and ICD are influenced by HCE and not by other components (SCE or CEE). In the ICE, HCE is more important compared to the SCE. The physical assets efficiency (CEE) does not influence the ICD. The finding suggests that when the value added by human capital increases, the company tends to reduce the ICD for fear of losing competitive advantage to competitors. The finding supports the proprietary cost theory. The finding also supports the cost of disclosure as constraint in full disclosure which then affects the decision usefulness of the financial statement information to users. The finding for VAIC in this study to some extent is similar to the finding in Williams' (2001).

In relation to company characteristics, only leverage and company size are found positively related to ICD which supports *H4* and *H5*. Company growth and profitability do not influence ICD. Finding in leverage suggests that the riskier the company the more information about the company's activities is required by the users to assist them to monitor the ability of the company to meet future obligations and the future growth of the company. With regards to firm size, the finding supports that big companies disclose more ICD. One reason might be due to the companies have more resources which make them capable of having more ICD. Another reason might be due to the political cost of the big companies which require them to disclose more information to meet the pressure groups' requirements.

Due to high value of coefficient in the regression analysis, a log linear analysis was conducted. The model for the log linear analysis is as follows:

$$\text{LnICD} = \alpha + \beta_1 \text{LnVAIC} + \beta_2 \text{LnPROFIT} + \beta_3 \text{LnLEV} + \beta_4 \text{LnMVBV} + \beta_5 \text{LnSIZE} + \varepsilon$$

Based on this approach, we can see the marginal changes occur in ICD for any changes in VAIC and its components as shown in Table VI. The current results are consistent with the previous one in terms of the directions of the coefficients in relation to IC performance items and other company characteristics. In addition, MVBV is found positively significant at 5 per cent level with ICD for all models.

6. Conclusions

Findings of the study provide evidence that VAIC is negatively related to ICD. However, when the components of VAIC are regressed separately, more informative

	Model 1	Model 2	Model 3	Model 4	Model 5
LnVAIC	−0.251				
	(−1.929)*				
LnICE		−0.234			
		(−1.858)*			
LnCEE		0.027			0.048
		(0.294)			(0.514)
LnHCE			−0.042		
			(−2.148)**		
LnSCE				−0.185	
				(−1.006)	
LnPROFIT	−0.040	−0.048	−0.042	−0.076	−0.093
	(−0.766)	(−0.873)	(−0.830)	(−1.585)	(−1.851)
LnLEV	0.105	0.110	0.106	0.116	0.128
	(2.826)***	(2.747)***	(2.860)***	(3.108)***	(3.201)***
LnMVBV	0.207	0.198	0.205	0.245	0.227
	(2.118)**	(1.931)*	(2.098)**	(2.494)**	(2.194)**
LnSIZE	0.157	0.163	0.159	0.136	0.141
	(2.221)**	(2.233)**	(2.243)**	(1.911)*	(1.919)*
Constant	2.088	2.077	2.043	1.999	2.057
	(7.864)***	(7.761)***	(7.721)***	(7.263)***	(7.536)***
R^2	0.352	0.353	0.352	1.322	0.314
Adjusted R^2	0.296	0.285	0.297	0.264	0.254
F-test	6.038***	5.178***	6.312***	5.515***	5.298***

Table VI.
Log linear analysis

Notes: $n = 64$. *,**,***Significant at 0.1, 0.5 and 0.01 levels, respectively

evidence prevails about the influence of HCE compared to SCE. Companies are reluctant to disclose IC elements when they reach a certain threshold of the IC performance. Thus, it is important for the accounting standard body and the enforcement agencies to ensure companies disclose IC elements in the annual reports either in narrative format or quantitative format. In addition, the findings show that ICD is also influenced by leverage, market to book value and firm size. Profitability is not significantly related to ICD.

The limitation of the study is the use of cross-sectional data. Panel data may provide more stable data and we can examine whether the incidence of reduced ICD are related to the increase in VAIC components. Further researches should be conducted on the influence of corporate governance mechanisms (board of directors, audit committee and internal audit function) and ownership structure that influence the ICD. Further studies may be conducted on examining the influence of regulation on the ICD. It is interesting to know whether the negative relationship between IC performance and ICD remains.

References

Abdolmohammadi, M.J. (2005), "Intellectual capital disclosure and market capitalization", *Journal of Intellectual Capital*, Vol. 25 No. 3, pp. 397-416.

Abeysekera, I. and Guthrie, J. (2004), "How is intellectual capital being reported in a developing nation", *Research in Accounting in Emerging Economies, Supplement 2, Elsevier Press, Amsterdam, pp. 149-165.*

Ahmed, A. and Mohd-Ghazali, N.A. (2012), "Intellectual capital disclosure trends: some Malaysian evidence", *Journal of Intellectual Capital*, Vol. 13 No. 3, pp. 377-397.

Ahmed, K. and Nicholls, D. (1994), "The impact of non-financial company characteristics on mandatory disclosure compliance in developing countries: the case of Bangladesh", *The International Journal of Accounting*, Vol. 29 No. 1, pp. 62-77.

April, K.A., Bosma, P. and Deglon, D.A. (2003), "IC measurement and reporting: establishing a practice in SA mining", *Journal of Intellectual Capital*, Vol. 4 No. 2, pp. 165-180.

Barako, D.G., Hancock, P. and Izan, H.Y. (2006), *Factors Influencing Voluntary Corporate Disclosure by Kenyan Companies Corporate Governance: An International Review*, Vol. 14 No. 2, pp. 107-125.

Bontis, N. (2003), "Intellectual capital disclosure in Canadian corporations", *Journal of Human Resource Costing and Accounting*, Vol. 7 No. 1, pp. 9-20.

Bontis, N., Keow, W.C.C. and Richardson, S. (2000), "Intellectual capital and business performance in Malaysian industries", *Journal of Intellectual Capital*, Vol. 1 No. 1, pp. 85-100.

Bozzolan, S., Favotto, F. and Ricceri, F. (2003), "Italian annual intellectual capital disclosure: an empirical analysis", *Journal of Intellectual Capital*, Vol. 4 No. 4, pp. 543-558.

Brennan, N. (2001), "Reporting intellectual capital in annual reports: evidence from Ireland", *Accounting, Auditing & Accountability Journal*, Vol. 14 No. 4, pp. 423-436.

Brinker, B. (2000), "Intellectual capital: tomorrow's asset, today's challenge", available at: www.cpavision.org/vision/wpaper05b.cfm (accessed 5 September 2005).

Brooking, A. (1996), *Intellectual Capital: Core Asset for the Third Millennium Enterprise*, International Thomson Business Press, London.

Bukh, P.N. (2003), "The relevance of intellectual capital disclosure: a paradox", *Accounting, Auditing and Accountability Journal*, Vol. 16 No. 1, pp. 49-56.

Chen, C.J.P. and Jaggi, B. (2000), "Association between independent non-executive directors, family control and financial disclosures in Hong Kong", *Journal of Accounting and Public Policy*, Vol. 19 Nos 4 & 5, pp. 285-310.

Chen, M., Cheng, S. and Hwang, Y. (2005), "An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance", *Journal of Intellectual Capital*, Vol. 6 No. 2, pp. 159-176.

Citron, D., Holden, J., Selim, G. and Oehlcke, F. (2005), *Do Voluntary Intellectual Capital Disclosures Provide Information about Firms' Intangible Assets?,* EBK Working Paper No. 2005/11, Cass Business School, London.

Craswell, A.T. and Taylor, S.L. (1992), "Discretionary disclosure of reserves by oil and gas companies: an economic analysis", *Journal of Business, Finance and Accounting*, Vol. 19 No. 2, pp. 295-308.

Eccles, R.G. and Mavrinac, S.C. (1995), "Improving the corporate disclosure process", *Sloan Management Review*, Vol. 36 No. 4, pp. 11-26.

Eng, L.L. and Mak, Y.T. (2003), "Corporate governance and voluntary disclosure", *Journal of Accounting and Public Policy*, Vol. 22 No. 4, pp. 323-345.

Firer, S. and William, S.M. (2005), "Intellectual capital and traditional measures of corporate performance", *Journal of Intellectual Capital*, Vol. 4 No. 3, pp. 348-360.

Gan, K. and Saleh, Z. (2008), "Intellectual capital and corporate performance of technology-intensive companies: Malaysia evidence", *Asian Journal of Business and Accounting*, Vol. 1 No. 1, pp. 113-130.

Garcia-Meca, E., Parra, I., Larran M. and Martinez, I. (2005), "The explanatory factors of intellectual capital disclosure to financial analysts", *European Accounting Review*, Vol. 6 No. 1, pp. 63-94.

Goh, P.C. (2005), "Intellectual capital performance of commercial banks in Malaysia", *Journal of Intellectual Capital*, Vol. 6 No. 3, pp. 385-396.

Goh, P.C. and Lim, K.P. (2004), "Disclosing intellectual capital in company annual reports: evidence from Malaysia", *Journal of Intellectual Capital*, Vol. 5 No. 3, pp. 500-510.

Gray, S.J., Meek, G.K. and Roberts, C.B. (1995), "International capital market pressures and voluntary annual report disclosure by US and UK multinational companies", *Journal of International Financial Management and Accounting*, Vol. 6 No. 1, pp. 43-68.

Guthrie, J. and Parker, L.D. (1990), "Corporate social disclosure practice: a comparative international analysis", *Advances in Public Interest Accounting*, Vol. 3, pp. 159-175.

Guthrie, J. and Petty, R. (2000), "Intellectual capital: Australian annual reporting practices", *Journal of Intellectual Capital*, Vol. 1 No. 3, pp. 241-251.

Guthrie, J., Petty, R. and Ricceri, F. (2006), "The voluntary reporting of intellectual capital: comparing evidence from Hong Kong and Australia", *Journal of Intellectual Capital*, Vol. 7 No. 2, pp. 254-271.

Guthrie, J., Petty, R. and Wells, R. (1999), "There is no accounting for intellectual capital in Australia: a review of annual reporting practices and the internal measurement of intangibles", available at: www.oecd.org/pdf/M00033000/M00033313.pdf (accessed 26 November 2007).

Guthrie, J., Petty, R., Yongvanich, K. and Ricceri, F. (2004), "Using content analysis as a research method to inquire into intellectual capital reporting", *Journal of Intellectual Capital*, Vol. 5 No. 2, pp. 282-293.

Haniffa, R.M. and Cooke, T.E. (2002), "Corporate governance structure and performance of Malaysian listed companies", *Journal of Accounting and Public Policy*, Vol. 24 No. 3, pp. 391-430.

Healy, P.M. and Palepu, K.G. (2001), "Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature", *Journal of Accounting and Economic*, Vol. 31, pp. 405-440.

Ho, S.M.S. and Wong, K.R. (2001), "A study of the relationship between corporate governance structures and the extent of voluntary disclosure", *Journal of International Accounting, Auditing and Taxation*, Vol. 10 No. 2, pp. 139-156.

Huang, C.C., Luther, R. and Tayles, M. (2007), "An evidence-based taxonomy of intellectual capital", *Journal of Intellectual Capital*, Vol. 8 No. 3, pp. 386-408.

Huei-Jen, S. (2006), "Application of the VAIC method to measures of corporate performance: a quantile regression approach", *The Journal of American Academy of Business*, Vol. 8 No. 2, pp. 156-160.

Jensen, M.C. and Meckling, W.H. (1976), "The theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 3, pp. 305-360.

Keenan, J. and Aggestam, M. (2001), "Corporate governance and intellectual capital: some conceptualizations", *Corporate Governance: An International Review*, Vol. 9 No. 4, pp. 259-275.

Krippendorff, K. (1980), *Content Analysis: an Introduction to its Methodology*, SAGE Publications, Newbury Park, CA and London.

Kujansivu, P. and Lonnqvist, A. (2007), "Investigating the value and efficiency of intellectual capital", *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 272-287.

Lev, B. (2001), *Intangibles: Management, Measurement and Reporting*, Brookings Institution, Washington, DC.

Lev, B. and Zarowin, P. (1999), "The boundaries of financial reporting and how to extend them", *Journal of Accounting Research*, Vol. 37 No. 2, pp. 353-385.

Li, J., Pike R. and Haniffa R. (2008), "Intellectual capital disclosure and corporate governance structure in UK firms", *Accounting and Business Research*, Vol. 38 No. 2, pp. 137-159.

Milne, M.J. and Adler, R.W. (1999), "Exploring the reliability of social and environmental disclosures content analysis", *Accounting, Auditing and Accountability Journal*, Vol. 12 No. 2, pp. 237-256.

Mohd-Saleh, N.M., Che Abdul Rahman, M.R. and Hassan, M.S. (2009), "Ownership structure and intellectual capital performance in Malaysia", *Asian Academy of Management*, Vol. 5 No. 1, pp. 1-29.

Oliveira, L.L., Rodrigues, L. and Craig R. (2006), "Firm-specific determinants of intangibles reporting: evidence from Portuguese Stock Market", *Journal of Human Resource Costing and Accounting*, Vol. 10 No. 1, pp. 11-33.

Organisation for Economic Co-operation and Development (1999), "Measuring reporting intellectual capital: experiences, issues, and prospects", International Symposium, Guidelines and Instructions for OECD Symposium, June, Amsterdam and Paris.

Owusu-Ansah, S. (1998), "The impact of corporate attributes on the extent of mandatory disclosure and reporting by listed companies in Zimbabwe", *The International Journal of Accounting*, Vol. 33, pp. 605-631.

Prencipe, A. (2004), "Proprietary costs and determinants of voluntary segment disclosure: evidence from Italian listed companies", *European Accounting Review*, Vol. 13 No. 2, pp. 319-340.

Pulic, A. (2000), "MVA and VAIC™ analysis of randomly selected companies from FTSE 250", available at: www.vaic-on-net/downloads/ftse30.pdf (accessed 26 March 2007).

Seetharaman, A., Zaini Sooria, H.H. and Saravanan, A.S. (2002), "Intellectual capital accounting and reporting in the knowledge economy", *Journal of Intellectual Capital*, Vol. 3 No. 2, pp. 128-148.

Sudarsanam, S., Sorwar, G. and Marr, B. (2005), *A Finance Perspective on Intellectual Capital*, Elsevier Butterworth Heinemann, Oxford, pp. 56-68.

Sveiby, K.E. (1997), *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*, Berrett-Koehler, San Francisco, CA.

Tan, H.P., Plowman, D. and Hancock, P. (2007), "Intellectual capital and financial returns of companies", *Journal of Intellectual Capital*, Vol. 8 No. 1, pp. 76-95.

Ting, I.W.K. and Lean, H.H. (2009), "Intellectual capital performance of financial institutions in Malaysia", *Journal of Intellectual Capital*, Vol. 10 No. 4, pp. 588-599.

Van der Meer-Kooistra, J. and Zijlstra, S.M. (2001), "Reporting on intellectual capital", *Accounting, Auditing and Accountability Journal*, Vol. 14 No. 4, pp. 456-476.

Vandemale, S.N., Vergauwen, P.G.M.C. and Smits, A.J. (2005), "Intellectual capital disclosure in the Netherlands, Sweden and the UK", *Journal of Intellectual Capital*, Vol. 6 No. 3, pp. 417-426.

Vergauwen, P.G. and Alem, F.J. (2005), "Annual report IC disclosures in the Netherlands, France and Germany", *Journal of Intellectual Capital*, Vol. 6 No. 1, pp. 89-104.

Wallace, R.S.O. and Naser, K. (1995), "Firm-specific determinants of comprehensiveness of mandatory disclosure in the corporate annual reports of firms on the stock exchange of Hong Kong", *Journal of Accounting and Public Policy*, Vol. 14 No. 4, pp. 311-368.

White, G., Lee, A. and Tower, G. (2007), "Drivers of voluntary intellectual capital disclosure in listed biotechnology companies", *Journal of Intellectual Capital*, Vol. 8 No. 3, pp. 517-537.

Williams, S.M. (2001), "Is intellectual capital performance and disclosure practices related?", *Journal of Intellectual Capital*, Vol. 2 No. 3, pp. 192-203.

Weber, R.P. (1990), *Basic Content Analysis: Quantitative Applications in the Social Science*, Sage Publications Inc., Newbury Park, CA.

Wong, M. and Gardner C. (2005), "Intellectual capital disclosure: New Zealand evidence", *Journal of Economic Literature Classification Code*, available at: www.afaanz.org/web2005/papers/gardnerc.pdf (accessed 26 November 2007).

Yau, F.S., Chun, L.S. and Balaram, R. (2009), "Intellectual capital reporting and corporate characteristics of public-listed companies in Malaysia", *Journal of Financial Reporting & Accounting*, Vol. 7 No. 1, pp. 17-35.

Further reading

Bontis, N. (2001), "Assessing knowledge assets: a review of the models used to measure intellectual capital", *International Journal of Management Reviews*, Vol. 3 No. 1, pp. 41-60.

Bruggen, A., Vergauwen, P. and Dao, M. (2009), "Determinants of intellectual capital disclosure: evidence from Australia", *Management Decision*, Vol. 47 No. 2, pp. 233-245.

Inchausti, B.G. (1997), "The influence of company characteristics and accounting regulation on information disclosed by Spanish firms", *The European Accounting Review*, Vol. 6 No. 1, pp. 45-68.

About the authors

Dr Hasnah Kamardin is an Associate Professor at the School of Accountancy, Universiti Utara Malaysia. Dr Hasnah Kamardin is the corresponding author and can be contacted at: hasnahk@uum.edu.my

Robiah Abu Bakar is a Lecturer at the School of Accountancy, Universiti Utara Malaysia.

Dr Rokiah Ishak is a Senior Lecturer at the School of Accountancy, Universiti Utara Malaysia.